

ON THE EVENT ARGUMENT AND ANTI-QUANTIFIER *ZUTSU* IN JAPANESE*

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1. Introduction

This paper examines the syntax of the distributive affix *zutsu* in Japanese, which attaches to a numeral quantifier (NQ), as exemplified in (1a–c):¹

- (1) a. **Taroo-to-Hanako**-ga [ni-satsu-zutsu-no hon] -o katta (-koto)
Taroo-and-Hanako-nom two-cl -dist -gen book-acc bought(-fact)
‘Taroo and Hanako bought two books each.’
- b. **Taroo-to-Hanako**-ga [hon ni-satsu-zutsu] -o katta (-koto)
Taroo-and-Hanako-nom book two-cl -dist -acc bought(-fact)
- c. **Taroo-to-Hanako**-ga hon-o ni-satsu-zutsu katta (-koto)
Taroo-and-Hanako-nom book-acc two-cl -dist bought(-fact)

It is well known that three positions are available for NQs; accordingly, the same three options are also available for NQs with *zutsu* (see Gil (1990) for relevant discussion). One of the readings available in (1a–c) is that Taroo bought two books and Hanako also bought two books.

When it comes to the position of *zutsu*, the distributive affix in question is not

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¹ Abbreviations used in this paper are as follows:

acc = accusative, cl = classifier, dat = dative, dist = distributive affix, e = event argument, e.c. = empty category [= elided argument], gen = genitive, nom = nominative, pl = plural.

In addition, binominal *each* (Safir and Stowell 1988) is used in English translation throughout the paper without any theoretical significance. See Section 7.

necessarily attached to an NQ modifying the object, but can also be attached to an NQ modifying other elements such as the subject, as shown in (2a–c):

- (2) a. ??[futa-ri -zutsu-no gakusei] -ga furansugo-to-doitsugo-o
 two-cl-dist -gen student -nom French-and-German-acc
 benkyooshiteiru (-koto)
 be studying (-fact)
 ‘Two students each are studying French and German.’
- b. ??[gakusei futa-ri -zutsu] -ga furansugo-to-doitsugo-o benkyooshiteiru (-koto)
 student two-cl-dist -nom French-and-German-acc be studying (-fact)
 ‘Two students each are studying French and German.’
- c. ??gakusei-ga futa-ri -zutsu furansugo-to-doitsugo-o benkyooshiteiru (-koto)
 student-nom two-cl-dist French-and-German-acc be studying (-fact)
 ‘Two students each are studying French and German.’

Although slightly degraded, these examples can describe the situation in which two students are studying French and another two students are studying German.

For terminology, following Safir and Stowell (1988), I call the element over which distribution takes place “Range NP (R-NP hereafter).” In (1a–c), *Taroo-to-Hanako* acts as an R-NP under the reading that Taroo bought two books and Hanako also bought two books. In (2a–c), the object NP appears to serve as an R-NP.

The paper is organized as follows. In Section 2, I introduce Oh’s (2006) QR-based approach to Korean distributive affix *ssik*, the Korean counterpart of *zutsu*, which sets a stage for the present study. Of interest is his claim that the proper relationship between *ssik* and its R-NP is established in LF via Quantifier Raising (May 1977, 1985: QR hereafter) of the R-NP. In Section 3, I argue against Oh’s proposal, and show that the relationship in point must be obtained in overt syntax. This in turn calls for an alternative to Oh’s LF-based analysis. Section 4 is then devoted to my proposal, based on the movement of the distributive operator, adopting the essence of Heim, Lasnik and May’s (1991) analysis of the reciprocal *each other*. In Section 5, based on the current proposal on the distributive affix in point, I clarify the context in which an object NP containing an NQ with *zutsu* can be elided. In Section 6, I examine cases where ellipsis of a subject NP containing an NQ with *zutsu* is intended. This section shows that not only LF-copying but also PF-deletion should be available to “elide” subjects in Japanese, and suggests a hybrid hypothesis for so-called “argument ellipsis” (AE hereafter) in Japanese. Finally, Section 7 concludes the paper.

2. Oh’s (2006) QR-based Approach to Anti-Quantifiers

This section briefly introduces Oh’s (2006) proposal on the Korean distributive affix *ssik*

in order to set the stage for the discussion to follow. The affix in question is attached to an NQ, parallel to its Japanese counterpart in (2a–c), as illustrated in (3):

- (3) namca twu-myeng-i sangca sey-kay-ssik-ul wunpanhayssta.
 man two-cl -nom box three-cl-dist -acc carried

‘Two men carried three boxes each.’

(Oh 2006: 26)

One of the readings available in (3) is that the two men each carried three boxes. He assumes that under this reading, (3) has the structure in (4) in overt syntax:²

- (4) [_{TP} D [_{TP} namca wu-myeng-i₁ [_{T'} [_{VP} sangca sey-kay-ssik-ul₂ [_{VP} e [_{VP} t₁ t₂ wunpanhayssta]]]]]]]

In (4), D represents the distributive operator, and *e* is the event argument. A crucial ingredient for Oh’s analysis is the QR of an R-NP in LF to a position c-commanding this distributive operator. In LF, the subject NP, the intended R-NP, is raised above D, as shown in (5):

- (5) [_{TP} namca twu-myeng-i₁ [_{TP} D [_{TP} t₁ [_{T'} [_{VP} sangca sey-kay-ssik-ul₂ [_{VP} e [_{VP} t₁ t₂ wunpanhayssta]]]]]]]]]
- ↑

For Oh, the structure in (5) makes the intended distribution of the subject NP, described above, available.³

Of particular interest is Oh’s statement that (6) is ambiguous between the two readings shown in (7) (see also Choe (1987) for related discussion):

- (6) namca twu-myeng-ssik-i sangca sey-kay-lul wunpanhayssta.
 man two-cl-dist -nom box three-cl-acc carried

(Oh 2006: 25)

- (7) a. Men in pairs carried each of a set of three boxes.
 b. Two men together carried three boxes (where happened more than one instance of this, simultaneously or one after another).

(Oh 2006: 33)

According to Oh, these two readings are realized by the following LF representations respectively:

² The structures given in this section are simplified from Oh’s (2006) proposed structures based on Heim and Kratzer’s (1998) framework, but the structures provided in the text are sufficient to show that QR plays an important role in his proposal. Readers are referred to Oh (2006) for the precise representations of (3) in overt syntax and LF.

³ See Oh (2006) for his semantic mechanism to interpret the distributive affix in question.

- c. #*twu-myeng-ssik-uy haksayng-i sey-kay-uy oykwuke -lul anta.*
 two-cl -dist -gen student -nom three-cl-gen foreign language-acc know
 ‘Two students each know (the) three foreign languages.’
- d. *sey-kay-uy oykwuke -lul twu-myeng-ssik-uy haksayng-i anta.*
 three-cl-gen foreign language-acc two-cl -dist -gen student -nom know
 ‘(the) three foreign languages, two students each know.’

We obtain the same type of paradigm with sentences containing an NQ with *zutsu* in Japanese, as shown in (11a–d):

- (11) a. ??*gakusei futa-ri-zutsu-ga furansugo-to-doitsugo-o benkyooshiteiru(-koto)*
 student two-cl-dist -nom French-and-German-acc be studying (-fact)
 ‘Two students each are studying French and German.’
- b. [*furansugo-to-doitsugo-o₁ [gakusei futa-ri-zutsu-ga [t₁ benkyooshiteiru]]]*
 French-and-German-acc student two-cl-dist -nom be studying
 (-koto)
 (-fact)
 ‘French and German, two students each are studying.’
- c. #*gakusei futa-ri-zutsu-ga furansugo-to-doitsugo-o yoku shitteiru(-koto)*
 student two-cl-dist -nom French-and-German-acc well know (-fact)
 ‘Two students each know French and German well.’
- d. ?[*furansugo-to-doitsugo-o₁ [gakusei futa-ri-zutsu-ga [t₁ yoku shitteiru]]*]
 French-and-German-acc student two-cl-dist -nom well know (-fact)
 ‘French and German, two students each know well.’

The difference between (10a, b) and (11a, b) on the one hand, and (10c, d) and (11c, d) on the other, is that the former contain the stage-level predicates, *sassta* ‘bought’ and *benkyoo-shiteiru* ‘be studying,’ and the latter involve the individual-level predicate *anta* ‘know’ and *shitteiru* ‘know.’ In the discussion which follows, I focus on the Japanese paradigm in (11), and assume that my argument extends to the Korean paradigm in (10).

First, notice that in parallel to (2), (11a) is slightly degraded. This slight deviance, if it is genuine, may be difficult, if not impossible, to account for under the QR-based approach since nothing seems to go wrong with the QR of the object NP in LF in this example. In addition, this deviance is not observed in (11b) in which the object NP is scrambled to the sentence-initial position in overt syntax. This asymmetry between (11a) and (11b), then, already suggests that what is relevant in licensing *zutsu* is the proper relationship between the distributive affix and the R-NP in overt syntax. Let us turn to the contrast between (11a) and

(11c), which shows that the distinction between stage-level and individual-level predicates must be taken into consideration. This dichotomy confirms that it is in overt syntax that the distributive affix *zutsu* is licensed (contra Oh 2006). Notice that if *zutsu* were licensed in LF, the object NP would be able to move to the sentence-initial position not only in (11a) but also in (11c). Accordingly, under the QR-based approach, (11a) and (11c) are expected to be equally grammatical, contrary to fact. Furthermore, the contrast between (11c) and (11d) provides additional support for the relevance of a relationship between the affix in question and the R-NP in overt syntax. The obvious difference between these two examples is the position of the intended R-NP in overt syntax. In (11d), the object NP is overtly raised to the sentence-initial position via scrambling in this example. In short, the paradigm in (11) shows that the intended R-NP must be located higher than an NP containing an NQ with *zutsu* in overt syntax. The question remains as to how to account for the contrast between (11a) and (11c); in particular, which element functions as an R-NP in (11a)? This contrast ought to be tied to the distinction between stage-level and individual-level predicates.

The contrast between (11a) and (11c) reminds us of Oh's (2006) proposal on the Korean distributive affix in Section 2, based on the existence of an event argument in syntax (see also Basilico 2003 for the existence of an event argument in syntax). If an event argument is available only with stage-level predicates (Kratzer 1995), the element in point seems to be the only possible candidate for the R-NP in (11a) since the object NP cannot act as such. If the event argument is indeed an R-NP in (11a), we are also able to account for why (11c) remains ungrammatical since individual-level predicates lack such an argument.

Before closing this section, I need to add that given the conclusion that the distributive affix should be structurally lower than the R-NP in overt syntax, we do not need to answer the question of when QR is available in scope-rigid languages since no QR is necessitated for the licensing of the distributive affixes under question. I take this as a welcome consequence. In the next section, I proceed to an alternative analysis which necessitates a proper relationship between the R-NP and the distributive affix in question in overt syntax as well as the existence of the event argument in sentences with a stage-level predicate.

4. Proposal: Distributor-Based Approach to Anti-Quantifiers

As noted in the end of the previous section, one important ingredient for the licensing of the affix in question in subject position is the presence of an event argument in syntax which is available only when the predicate is stage-level (Kratzer 1995). I assume that the event argument occupies SPEC of Event Phrase (Harley 1995, Travis 1994, among others: EvP, hereafter), as illustrated in (12):

(12) [_{EvP} Event Argument [_{Ev'} [_{vP} ...] Ev]]

As for the structure of the distributive affix, I assume the structure in (13):

(13) [_{DistP} Distributive Op [_{Dist'} [_{NQ} Num+Cl] Dist]]

The distributive affix heads Distributive Phrase (DistP, hereafter), and its SPEC is occupied by the distributive operator (D-Op hereafter), which I assume corresponds to covert *each*. In this structure, the sole function of the distributive affix is to provide a position for the D-Op.

When it comes to the Op-movement in question, adopting Heim, Lasnik and May's (1991) proposal on English reciprocal, I assume that the Op in question is raised and adjoined to the R-NP. According to Heim, Lasnik and May (1991), *each* of the reciprocal *each other* is raised and adjoined to the antecedent. For instance, (14a) has the LF representation given in (14b) via the movement of *each*.⁴

- (14) a. Taroo and Hanako praised each other.
 b. [_{TP} [[Taroo and Hanako] each₁]₁ [_{VP} praised [t₁ other]]]

Likewise, in (15) for example, the D-Op is raised and adjoined to the intended R-NP *Taroo-to-Hanako* 'Taroo and Hanako' under the reading that Taroo bought two books and Hanako also bought another two books.

- (15) Taroo-to-Hanako-ga hon ni-satsu-zutsu-o katta (-koto)
 Taroo-and-Hanako-nom book two-cl -dist -acc bought(-fact)
 'Taroo and Hanako bought two books each.'

The movement in point is illustrated in (16):

- (16) [_{TP} [_{EVP} e [_{VP} [[Taroo-to-Hanako] D-Op₁]-ga [_{VP} [_{DistP} t₁ [_{NQ} hon ni-satsu]-zutsu]-o
 katta]]]](-koto)
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Now, the unavailability of the object NP acting as the R-NP in (11c), repeated here as (17), naturally follows:

- (17) #gakusei futa-ri -zutsu-ga furansugo-to-doitsugo-o yoku shitteiru(-koto)
 student two-cl-dist -nom French-and-German-acc well know (-fact)
 'Two students each know French and German well.'

Of importance here, is the well-known restriction on movement which states that movement cannot be downward.

⁴ I do not illustrate the movement related to [t other] since it is not crucial for the present purpose. The reader is referred to Heim, Lasnik and May (1991).

- (18) [TP [vP [DistP t₁ [NQ gakusei futa-ri]-zutsu]-ga [vP [[furansugo-to-doitsugo] D-Op₁]-o
 yoku shitteiru]]] (-koto)
-

In (18), since the predicate is individual-level, no event argument is present, and the only potential R-NP is the object NP. However, if the D-Op targets this object NP, the movement in point becomes downward. As a result, the structure in (18) is not tenable; consequently, (17) is not acceptable.

Remarkably, if the object NP is scrambled to the sentence-initial position, (17) becomes acceptable, as shown in (11d), repeated here as (19):

- (19) ²[TP [vP furansugo-to-doitsugo-o₁ [vP gakusei futa-ri -zutsu-ga [vP t₁ yoku
 French-and-German-acc student two-cl-dist -nom well
 shitteiru]]]] (-koto)
 know (-fact)

‘French and German, two students each know well.’

Notice that the movement in question, now, becomes upward, as shown in (20):

- (20) [TP [vP [[furansugo-to-doitsugo] D-Op₂]-o₁ [vP [DistP t₂ [NQ gakusei futa-ri]-zutsu]-ga
 [vP t₁ yoku shitteiru]]]] (-koto)
-

In (11b) also, repeated here as (21a), the scrambling of the object NP is followed by the upward movement of the D-Op, as illustrated in (21b):

- (21) a. [TP [EvP e [vP furansugo-to-doitsugo-o₁ [vP gakusei futa-ri -zutsu-ga [vP t₁
 French-and-German-acc student two-cl-dist -nom
 benkyooshiteiru]]]]] (-koto)
 be studying (-fact)

‘Two students each are studying French and German.’

- b. [TP [EvP e [vP [[furansugo-to-doitsugo] D-Op₂]-o₁ [vP [DistP t₂ [NQ gakusei
 futa-ri]-zutsu]-ga [vP t₁ benkyooshiteiru]]]]] (-koto)
-

The present proposal therefore correctly predicts without any additional, speculative assumptions, that there is no grammatical contrast between (19) and (21a).

Finally, we have to return to (11a), repeated here as (22):

(22)^{??} [TP [EVP *e* [VP *gakusei futa-ri-zutsu-ga* [VP *furansugo-to-doitsugo-o*
 student two-cl-dist -nom French-and-German-acc
benkyooshiteiru]]]] (-koto)
 be studying (-fact)

‘Two students each are studying French and German.’

The current approach based on the D-Op forces the conclusion that the object NP is not an R-NP in this example. Yet, the example in question is not as deviant as (17). The contrast between (17) and (22) therefore indicates that in the latter example, *zutsu* successfully finds an R-NP, which c-commands this distributive affix and that the slight marginality of this example comes from reasons independent of the licensing of the distributive affix under question. In (22), the only element which c-commands the distributive affix is the event argument. Therefore, we are forced to conclude that the R-NP is this event argument in this example. Under the assumption that the event argument can be plural if it contains sub-events (Krifka 1992, Lasersohn 1995, among others), I propose that the movement of the D-Op is as in (23):

(23) [TP [EVP [[*e*] D-Op₁] [VP [DistP t₁ [NQ *gakusei futa-ri*]-*zutsu*]-*ga*
 ↑
 [VP *furansugo-to-doitsugo-o benkyooshiteiru*]]]] (-koto)

Recall at this point that Oh (2006) proposes that (6), repeated here as (24), allows the two distributive readings in (7), repeated here as (25a, b):

(24) *namca twu-myeng-ssik-i sangca sey-kay-lul wunpanhayssta.*
 man two-cl -dist -nom box three-cl-acc carried

(Oh 2006: 25)

- (25) a. Men in pairs carried each of a set of three boxes.
 b. Two men together carried three boxes (where happened more than one instance of this, simultaneously or one after another).

(Oh 2006: 33)

Of importance for the present purpose is Oh’s claim that these two readings require the following two distinct LF representations:

- (26) a. [TP *sangca sey-kay-lul*₂ [TP D [TP *namca twu-myeng-ssik-i*₁ [T' [VP *e* [VP t₁
 t₂ *wunpanhayssta*]]]]]]]]
 b. [TP *e*₃ [TP D [TP *namca twu-myeng-ssik-i*₁ [T' [VP *sangca sey-kay-lul*₂ [VP t₃
 [VP t₁ t₂ *wunpanhayssta*]]]]]]]]]]

Oh specifically argues that the reading in (26a) does not involve distribution over the event argument; rather, the QR-ed object NP is acting as the R-NP. However, I have concluded that the reading in question results from the D-Op taking the event argument as the R-NP.

To summarize this section, I have proposed that the c-command requirement posed on the distributive affix *zutsu*, described in Section 3, arises as a consequence of the movement of the D-Op in overt syntax. Given the well-motivated assumption that movement must be upward, the R-NP then must c-command the D-Op in question in overt syntax. In addition, armed with the assumption that the event argument is present only with stage-level predicates, I have accounted for the fact that the distributive affix in question can be part of the subject NP only when the predicate is stage-level.

5. Argument Ellipsis of an NQ with *Zutsu* in Object Position

Under the current proposal, this section discusses the availability of argument ellipsis (AE) of an NP with *zutsu* in object position. The purpose of this section is to show that the current proposal provides a means to solve a puzzle concerning the AE of an NP containing an NQ with *zutsu*.

In his pioneering work on AE, Oku (1998) observes that subjects can be elided in Japanese, as in (29b), following (29a):

- (29) a. Taroo-ga [[jibun-no ronbun]-ga saiyou-sareru] -to omotteiru.
 Taroo-nom self-gen paper -nom will be accepted -that think
 ‘Taroo thinks that his paper will be accepted.’
- b. Hanako-mo [*e.c.* saiyou-sareru] -to omotteiru.
 Hanako-also will be accepted -that think
 ‘Hanako also thinks that (his paper/her paper) will be accepted.’

Importantly, (29b) is ambiguous between strict and sloppy readings. Under the strict reading, this sentence means that Hanako also thinks that Taroo’s paper will be accepted. On the other hand, under the sloppy reading, it means that Hanako also thinks that her own paper will be accepted.

Notice that (29b) cannot be analyzed as an instance of VP-deletion since the (embedded) subject NP is elided. Furthermore, this covert subject cannot be *pro* since the sloppy reading is available for this elided subject. Oku’s proposal is that in LF, the embedded subject NP of (29a) is copied to *e.c.* in (29b).⁶

Given Oku’s LF-copying approach to AE, let us examine (30b, c) following (30a):

⁶ See Saito (2007), Shinohara (2006), and Takahashi (2008) for supporting evidence for this LF-copying analysis of AE.

- (30) a. Taroo-to-Hanako-ga **hon ni-satsu-zutsu-o** katta.
 Taroo-and-Hanako-nom book two-cl -dist -acc bought
 ‘Taroo and Hanako bought two books each.’
- b. Jiroo-to-Yuuko-mo *e.c.* katta.
 Jiroo-and-Yuuko-also bought
 ‘Jiroo and Yuuko also bought (two books (each)).’
- c. ^(?)Jiroo-mo *e.c.* katta.
 Jiroo-also bought
 ‘Jiroo also bought (two books)’

In (30b-c), the object NP is elided, as indicated as *e.c.* The intended reading of (30a) is that Taroo and Hanako each bought two books. In this context, (30b) can mean Jiroo and Yuuko each also bought two books. Of significance is the fact that not only (30b) but also (30c) can follow (30a) although it may be slightly degraded. (30c) can describe the situation in which Jiroo also bought two books.

If the bold-faced underlined NP with the D-Op were copied to *e.c.* in (30c), the sentence should have the LF representation with the D-Op movement in point, as illustrated in (31):⁷

- (31) [TP [EVP *e* [VP [[Jiroo] D-Op₁]-mo [VP [DistP **t₁** [NQ **hon ni-satsu-zutsu-o** katta]]]]
- ↑ ✕

By definition, the D-Op must be adjoined to a plural R-NP. However, *Jiroo* is singular, and thus, it should not be able to function as an R-NP. The fact that (30c) can follow (30a), therefore, indicates that (31) should not be the correct LF representation of (30c). Since a cause of the problem lies in the D-Op movement, what is copied to *e.c.* in (30c) must be the DistP without the D-Op. This is exactly what we obtain under LF-copying.

Under the Single Output Syntax model (Bablijik 1995, 2002), by the time the copying operation is to take place in LF, the D-Op is already raised and adjoined to the R-NP. This in turn indicates that what is copied to *e.c.* in (30b) from (30a) is the DistP without the D-Op in question. Given the assumption that the D-Op movement is an instance of A-movement, in parallel to *each*-movement (Heim, Lasnik and May 1991), and that A-movement does not leave any trace (Lasnik 1999, Saito and Hoshi 2000), the LF representation of (30c) after the intended copying operation, must be as in (32):

- (32) [TP [EVP *e* [VP Jiroo-mo [VP [DistP [NQ **hon ni-satsu-zutsu-o** katta]]]]
- Jiroo-also book two-cl -dist -acc bought

⁷ I leave aside questions concerning the status of particles in AE in this paper. See Saito (2007) for relevant discussion.

Under the current assumption that *zutsu* itself does not have any significant semantic import, (32) is then basically equated with (33):

- (33) [TP [EVP *e* [VP Jiroo-mo [VP [NQ **hon ni-satsu**]-o katta]]]
 Jiroo-also book two-cl -acc bought
 ‘Jiroo also bought two books.’

As a result, even under the copying-based approach to AE, it is naturally expected that (30c) can follow (30a), and it means that Jiroo also bought two books.

Accordingly, (30b) should have either of the LF representations given in (34a, b):⁸

- (34) a. [TP [EVP *e* [VP Jiroo-to-Yuuko-mo [VP [DistP [NQ **hon ni-satsu**]-zutsu]-o
 Jiroo-and-Yuuko-also book two-cl -dist -acc
 katta]]]] (-koto)
 bought (-fact)
- b. [TP [EVP *e* [VP [[Jiroo-to-Yuuko] D]-mo [VP [DistP [NQ **hon ni-satsu**]-zutsu]-o
 Jiroo-and-Yuuko -also book two-cl -dist -acc
 katta]]]] (-koto)
 bought (-fact)

(34a) should allow the reading that Jiroo and Yuuko also bought two books together whereas (34b) should yield the reading that Jiroo and Yuuko also bought two books each, due to the presence of D, the base-generated covert *each*. The current proposal therefore predicts that following (30a), (30b) can be interpreted either collectively or distributively. This prediction is borne out. The collective reading in question becomes more salient if appropriate context is given, such as the one in (35):

- (35) Jiroo-to-Yuuko-mo okane-o awasete issyo-ni *e.c.* katta.
 Jiroo-and-Yuuko-also money-acc putting together together bought
 ‘Jiroo and Yuuko also bought (two books) together, putting their money together.’

The question to be raised now is whether the same copying operation is also responsible for AE in subject position. This is the issue to be dealt with in Section 6.

6. Argument Ellipsis of an NQ with *Zutsu* in Subject Position

The cases discussed in Section 5 are all accommodated under the LF-copying approach. In this section, however, examining the availability of sloppy reading in cases involving an NQ with *zutsu* in subject position, we will see that not only LF-copying but also PF-deletion is necessary in order to fully account for AE in Japanese. This leads to the suggestion that in

⁸ In Section 6, I will show that AE can also be obtained via PF-deletion in (30b).

principle, AE can be created by either PF-deletion or LF-copying: the “hybrid” hypothesis of AE.

Let us start with (36). Suppose that some student representatives and teachers are about to have a meeting to decide who will bring what to the coming potluck party:⁹

- (36) a. ^{??}Tanaka-sensei-wa [[(jibun-no) gakusei futa-ri-zutsu-ga
 Tanaka-teacher-top self-gen student two-cl -dist -nom
 suupu-to-sarada-o tsukuru]-to] omotteiru.
 soup-and-salad-acc make -that think
 ‘Prof. Tanaka thinks that two students each will make soup and salad.’
- b. ^{???}Yamada-sensei-wa [[e.c. sushi-to-dezaato-o tsukuru]-to] omotteiru.
 Yamada-teacher-top sushi-and-dessert-acc make] -that think
 ‘Prof. Yamada thinks that (two students (each)) will make sushi and dessert.’
- c. ^{?/??}Yamada-sensei-wa [[e.c. dezaato-o tsukuru]-to] omotteiru.
 Yamada-teacher-top dessert-acc make] -that think
 ‘Prof. Yamada thinks that (two students) will make dessert.’

(36b) as well as (36c) can follow (36a) although the former two sentences are degraded, along with the latter.

Under the LF-copying approach to AE adopted in Section 5, (37) would be the LF representation of (36b):

- (37) Yamada-sensei-wa [CP [EVP e [VP [DistP [NO gakusei futa-ri]-zutsu]-ga
 Yamada-teacher-top student two-cl -dist -nom
 sushi-to-dezaato-o tsukuru]]-to] omotteiru
 sushi-and-dessert-acc make -that think

Of importance here is the claim that what is copied in (37) is the DistP without the D-Op. Thus, (37) should be equated with (38):

- (38) Yamada-sensei-wa [CP [EVP e [VP [NO gakusei futa-ri]-ga sushi-to-dezaato-o
 Yamada-teacher-top student two-cl -nom sushi-and-dessert-acc
 tsukuru]]-to] omotteiru
 make -that think

In (38), and thus (37), since the subject QP is structurally higher than the plural object, the

⁹ There is dialectal/idiolectal variation among native speakers of Japanese about their judgment of (36a–c), (42a–c), and (47a–c). I leave this issue for future research to examine why such variation exists.

former necessarily takes scope over the latter given the assumption that Japanese exhibits scope rigidity (Kuroda 1971, Hoji 1985). This scope relation between the two QPs leads to one of the possible, though not salient, readings available in (36b); that is, Prof. Yamada thinks that two students (of his) will make sushi and dessert.

Importantly, (36b) also permits the reading that Prof. Yamada thinks that two students (of his) will make sushi, and another two students (of his) will make dessert. In order to obtain this reading, parallel to (36a), we need the D-Op in (36b). Under the current proposal, given the assumption that covert *each*, dubbed as D, can directly adjoin to a plural element, it is not unnatural that in (36b), the event argument is directly adjoined by D, and the DistP without the D-Op is copied to *e.c.*, as shown in (39):

- (39) Yamada-sensei-wa [CP [EVP [[e] D] [vP [NO gakusei futa-ri]-ga
 Yamada-teacher-top student two-cl -nom
 [[sushi-to-dezaato] D] -o tsukuru]]-to] omotteiru
 sushi-and-dessert -acc make -that think

Notice that in the relevant respect, this LF representation is basically the same as the one in (40b), which is the LF representation of (11a), repeated here as (40a),

- (40) a. ??[TP [EVP e [vP gakusei futa-ri -zutsu-ga [vP furansugo-to-doitsugo-o
 student two-cl-dist -nom French-and-German-acc
 benkyooshiteiru]]]] (-koto)
 be studying (-fact)
 ‘Two students each are studying French and German.’

- b. [TP [EVP [[e] D-Op₁] [vP [DistP t₁ [NQ gakusei futa-ri]-zutsu]-ga
 ↑ ✓
 [vP [[furansugo-to-doitsugo] D]-o benkyooshiteiru]]]] (-koto)

Then, it is not surprising that (39) realizes the type of reading available with (36a) and (40a): (36b) means that a group of two students would make sushi and another group of two students would make dessert. In addition, the slight marginality of (36b) might also be expected since the apparent distribution of the students over sushi and dessert is in fact “indirect” (see Section 4).

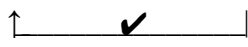
In contrast to (36b), (36c) following (36a) can describe the situation in which Prof. Yamada thinks that two students will make some dessert. Under the LF-copying, (41) is the LF-representation of (36c):

- (41) Yamada-sensei-wa [CP [TP [EVP e [vP [DistP [NO gakusei futa-ri]-zutsu]-ga
 Yamada-teacher-top student two-cl -dist -nom
 [vP dezaato-o tsukuru]]]]-to] omotteiru
 dessert-acc make -that think

Crucially, the object NP has been scrambled, which makes it an appropriate R-NP for the D-Op in overt syntax. With the upward movement of the D-Op to the scrambled object NP, the sentence is fully acceptable, as predicted, parallel to (11b), repeated here as (44a), with the derivational steps in (44b):

- (44) a. [TP [EVP *e* [vP furansugo-to-doitsugo-o₁ [vP gakusei futa-ri -zutsu-ga [vP t₁ French-and-German-acc student two-cl-dist -nom benkyooshiteiru]]]]] (-koto)
be studying (-fact)

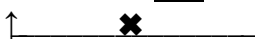
‘Two students each are studying French and German.’

- b. [TP [EVP *e* [vP [[furansugo-to-doitsugo] D-Op₂]-o₁ [vP [DistP t₂ [NQ gakusei futa-ri]-zutsu]-ga [vP t₁ benkyooshiteiru]]]]] (-koto)
- 

Turning to (42c) in relation to (36c), however, I find no significant contrast between these two examples. The fact that the reading in question is permitted in (42c) follows from the LF representation in (41), repeated here as (45), under LF-copying:

- (45) Yamada-sensei-wa [CP [TP [EVP *e* [vP [DistP [NQ gakusei futa-ri]-zutsu]-ga Yamada-teacher-top student two-cl -dist -nom [vP dezaato-o tsukuru]]]]-to] omotteiru
dessert-acc make -that think

Of importance is the fact that there is no potential R-NP c-commanding the D-Op in (46), which would be the LF-representation of (42c) under PF-deletion:

- (46) Yamada-sensei-wa [CP [TP [EVP *e* [vP dezaato-o [vP [DistP D-Op [NQ gakusei futa-ri]-zutsu]-ga tsukuru]]]]-to] omotteiru
- 

The D-Op cannot be adjoined to the scrambled object NP since it is singular. In addition, there is an event consisting of one sub-event of making dessert in (42c), and thus, the event argument is not a potential R-NP in (43), either.

In short, it is not clear how the contrasts between (36a–c) and (42a–c) with respect to readings available in (36b, c) and (42b, c) can be accommodated without adopting both LF-copying and PF-deletion. I therefore take these data as supporting evidence for the hypothesis that not only LF-copying but also PF-deletion must be an option available for AE in Japanese: the hybrid hypothesis for AE in Japanese.

Second, I have shown in Section 3 that there is a contrast between stage-level and individual-level predicates with respect to the licensing of an NQ with *zutsu* contained in the subject NP. When the predicate is individual-level, the object NP ought to be scrambled to a position c-commanding the subject so that it can act as the R-NP. Bearing this point in mind,

(53) [TP [EVP *e* [VP [[Jiroo-to-Yuuko] D-Op₁]-mo [VP [DistP t₁ [NQ hon ni-satsu]-zutsu]-o katta]]]] (-koto)

Since the NP *Jiroo-to-Yuuko* is plural, nothing would go wrong with the D-Op movement in (53). (52b) is thus one case in which either of the two options, LF-copying or PF-deletion, can be selected, due to there being no intervening factor prohibiting either of the options from applying.

7. Concluding Remarks

This paper has shown that the distributive affix *zutsu* and its Korean counterpart *ssik* are licensed by a plural NP c-commanding an NP containing an NQ with the affix in point in overt syntax. In order to capture this structural requirement, I have proposed an analysis of the affix in point, based on the (distributive) operator-movement. The proposed analysis enables us to derive the structural requirement in point from the general ban on downward movement. Furthermore, based on the contrast between stage-level and individual-level predicates in licensing the affix in point in subject position, I have argued that the event argument, which occupies SPEC EvP when the predicate is stage-level, can act as an R-NP in overt syntax. This paper has provided further support for the hypothesis that the event argument can act as an R-NP (Balusu 2006, 2010). However, I have suggested two modifications to his proposal. First, the event argument can, but not always, act as an R-NP. Second, the distributive operation involves D-Op movement in syntax.

Based on this Op-based approach to the distributive affix *zutsu*, I examined cases where an NP containing an NQ with *zutsu* is elided. I have suggested that in principle, so-called argument ellipsis results from either LF-copying or PF-deletion. However, due to independent reasons such as the licensing of the distributive operator, these two options are not always equally available.

This paper leaves significant questions open for future research such as why English binominal *each* cannot take the event argument as the R-NP, as observed in (54) (Safir and Stowell 1988):

(54) *Two students each read LGB and Barriers.

Given the assumption that the event argument is uniformly available across natural languages, it should also be available in English. One way to deal with this dichotomy is provided in Balusu's (2006) proposal on duplicated numerals in Telugu, certainly tied to a question of whether the current proposal extends to duplicated numerals in Dravidian languages such as Telugu (Balusu 2006, 2010): The duplicated numeral projects DistP whose SPEC is occupied by the D-Op. In spite of such unresolved issues to this point, my intention is to broaden future research relating to distributive affixes and their relation to AE in East Asian languages.

References

- Ahn, S.-H. (1990) *Korean Quantification and Universal Grammar*, Ph.D. dissertation, University of Connecticut, Storrs.
- Balusu, R. (2006) "Distributive Reduplication in Telugu," *NELS* 36, 39–52.
- Balusu, R. (2010) "Semantics of Reduplicative Numerals in Telugu," paper presented at the 7th Workshop of the International Research Project on Comparative Syntax and Language Acquisition, Nanzan University, January 2010.
- Basilico, D. (2003) "The Topic of Small Clauses," *Linguistic Inquiry* 34, 1–35.
- Bobaljik, J. D. (1995) *Morphosyntax: The Syntax of Verbal Inflection*, Ph.D. dissertation, MIT.
- Bobaljik, J. D. (2002) "A-chains at the PF-interface: Copies and "Covert" Movement," *Natural Language & Linguistic Theory* 20, 197–267.
- Choe, J.-W. (1987) *Anti-Quantifiers and a Theory of Distributivity*, Ph.D. dissertation, University of Massachusetts, Amherst.
- Gil, D. (1990) "Markers of Distributivity in Japanese and Korean." In H. Hoji, ed., *Japanese/Korean Linguistics* 1, CSLI, Stanford, 385–392.
- Ha, S. (2008) "The VP Spell-out Domains and Scope Rigidity," *Toronto Working Papers in Linguistics* 28, 57–70.
- Harley, H. (1995) *Subjects, Events and Licensing*, Ph.D. dissertation, MIT.
- Heim, I. and A. Kratzer (1998) *Semantics in Generative Grammar*, Blackwell, Malden.
- Heim, I., H. Lasnik and R. May (1991) "Reciprocity and Plurality," *Linguistic Inquiry* 22, 63–101.
- Hoji, H. (1985) *Logical Form Constraints and Configurational Structures in Japanese*, Ph.D. dissertation, University of Washington, Seattle.
- Kratzer, A. (1995) "Stage-level and Individual-level Predicates." In G. Carlson and F. Pelletier, eds., *The Generic Book*, University of Chicago Press, Chicago, 125–175.
- Krifka, M. (1992) "Thematic Relations as Links between Nominal Reference and Temporal Constitution." In I. Sag and A. Szabolcsi, eds., *Lexical Matters*, CSLI, Stanford, 29–53.
- Kuroda, S.-Y. (1971) "Remarks on the Notion of Subject with Reference to Words like Also, Even, or Only: Part II," *Annual Bulletin*, vol.4: Research Institute of Logopedics and Phoniatics, Tokyo University, 127–152.
- Lasnik, P. (1995) *Plurality, Conjunction, and Events*, Kluwer, Dordrecht.
- Lasnik, H. (1999) "Chains of Arguments." In S. D. Epstein and N. Hornstein, eds., *Working Minimalism*, MIT Press, Cambridge, Mass., 189–215.
- May, R. (1977) *Grammar of Quantification*, Ph.D. dissertation, MIT.
- May, R. (1985) *Logical Form: Its Structure and Derivation*, MIT Press, Cambridge, Mass.
- Oh, S.-R. (2006) *Plurality Markers across Languages*, Ph.D. dissertation, University of Connecticut, Storrs.
- Oku, S. (1998) *A Theory of Selection and Reconstruction in the Minimalist Perspective*, Ph.D. dissertation, University of Connecticut, Storrs.
- Safir, K. and T. Stowell (1988) "Binominal each," *NELS* 18, 426–450.
- Saito, M. (2007) "Notes on East Asian Language Ellipsis," *Language Research* 43, 203–227.
- Saito, M. and H. Hoshi (2000) "Japanese Light Verb Constructions and the Minimalist Program." In R. Martin et al., eds., *Step by Step: Essays in Minimalist Syntax in Honor of Howard Lasnik*, MIT Press, Cambridge, Mass., 261–295.
- Shinohara, M. (2006) "On some Differences between the Major Deletion Phenomena and Japanese Argument Ellipsis," unpublished ms., Nanzan University.
- Sohn, K.-W. (1995) *Negative Polarity Items, Scope and Economy*, Ph.D. dissertation, University of Connecticut, Storrs.

- Takahashi, D. (2008) "Noun Phrase Ellipsis." In S. Miyagawa and M. Saito, eds., *The Oxford Handbook of Japanese Linguistics*, Oxford University Press, Oxford, 394–422.
- Travis, L. (1994) "Event Phrase and a Theory of Functional Categories," *Proceedings of the 1994 Annual Meeting of the Canadian Linguistic Association*, Toronto Working Papers in Linguistics, 559–570.